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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,772	08/20/2001	Makoto Kouno	018889-0196	6952

7590

01/29/2002

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EXAMINER

EDMONDSON, LYNNE RENEE

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 01/29/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/931,772

Applicant(s)

KOUNO ET AL.

Examiner

Lynne R. Edmondson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 21 is objected to because of the following informalities: There appears to be at least one line missing after "corrugated fins" in line 3 of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims contain the term "slime-like" in reference to the coating. The term renders the claims indefinite. For examination purposes it is presumed that the flux coating is applied in at least partially liquid form rather than dry powder form.

Appropriate correction is required.

3. Claim 21 recites the limitation "the endless coating belt" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 5 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Wallace (USPN 4279943).

Wallace teaches a flux (resin) coating apparatus comprising a pair of rotating rollers (14,48) to be rotated in opposite directions while in contact (col 3 lines 20-25) forming an inlet section for storing flux between the rollers (figure 4), a dam member (support, 16) is disposed such that it slides between the pair of feed rollers and prevents coating material from flowing out of the inlet area (figure 1, col 2 lines 31-46 and col 2 lines 53-61) and a pair of endless coating belts (12,60) formed of an elastic material (rubber). A tapered pressure plate (54) is also employed (col 3 lines 26-33).

5. Claims 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sprengling (USPN 4496415).

Sprengling teaches a flux (resin) coating apparatus comprising a pair of rotating rollers (22,23) to be rotated in opposite directions while in contact forming an inlet section for storing flux between the rollers (figure and col 4 lines 48-61), a pair of endless coating belts (25) and a pair of presser plates (28, 29) which are vertically

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moveable for precise placement of the belts relative to the substrate to be coated (col 5 lines 3-30). The flux (resin) is taught as liquid between the heated rollers (col 5 lines 20-24 and col 6 lines 29-42).

6. Claims 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Rodgers (USPN 5372493).

Rodgers teaches a flux (resin) coating apparatus comprising a pair of endless coating belts (2,4). The lower belt is longer than the upper belt (figure 2, col 3 lines 22-28 and col 6 lines 57-68) and a pair of presser plates (12,18) which press the belts (col 3 lines 29-45). The plates are vertically adjustable to provide the necessary clearance and are shown as tapered in figures 1-2 (col 4 lines 38-50).

7. Claims 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugawara et al. (USPN 5560425).

Sugawara teaches a method of manufacturing a heat exchanger comprising the steps of applying a flux coating to peaks of corrugated fins (11a) and edges of the tube insertion holes (col 6 lines 33-50), stacking the fins and a plurality of flat tubes, inserting the tubes into the insertion holes of the header (col 6 line 58 – col 7 line 12) and heating the assembly thereby brazing (soldering) the workpiece (col 10 lines 41-65). See also Sugawara claims 4-9 and 13-17.

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8. Claims 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Takai et al. (USPN 5295302).

Takai teaches a method of manufacturing a heat exchanger comprising the steps of applying a flux coating to peaks of corrugated fins and edges of the tube insertion holes, stacking the fins and a plurality of flat tubes, inserting the tubes into the insertion holes of the header and heating the assembly thereby brazing the workpiece (col 6 line 64 –col 7 line 61). See also Takai claims 1-5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rodgers (USPN 5372493) in view of Williams et al. (USPN 5651412).

Rodgers teaches a flux (resin) coating apparatus comprising a pair of rotating rollers (56,62) to be rotated in opposite directions while in contact (col 4 lines 18-26) forming an inlet section for storing flux (10) between the rollers, a dam (32) in sliding contact with the lower roller and a pair of endless coating belts (2,4). The lower belt is longer than the upper belt (figure 2, col 3 lines 22-28 and col 6 lines 57-68). A pair of presser plates (12,18) press the belts (col 3 lines 29-45) and the dams serve to guide

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the flux (col 3 lines 57-64). See also Rodgers claims 1 and 4-6. However, there is no disclosure of the dams in contact with the both rollers.

Williams teaches a flux coating apparatus comprising a pair of dam (42) in contact with and disposed on opposite ends of both feed rollers (figure 2 and col 4 lines 54-63).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ dams in contact and on opposed ends of both feed rollers to control fluid flow and thereby control the size and width of the coating (Rodgers, col 3 lines 57-63).

10. Claims 7 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace (USPN 4279943) in view of Sprengling (USPN 4496415).

Wallace teaches a flux (resin) coating apparatus comprising a pair of rotating rollers (14,48) to be rotated in opposite directions while in contact (col 3 lines 20-25) forming an inlet section for storing flux between the rollers (figure 4), a dam member (support, 16) is disposed such that it slides between the pair of feed rollers and prevents coating material from flowing out of the inlet area (figure 1, col 2 lines 31-46 and col 2 lines 53-61) and a pair of endless coating belts (lower 12, upper 60) formed of an elastic material (rubber). A tapered pressure plate (54) is also employed (col 3 lines 26-33). However there is no disclosure of a pair of pressure plates.

Sprengling teaches a flux (resin) coating apparatus comprising upper and lower endless coating belts (25) and a pair of presser plates (28, 29) which are vertically

moveable for precise placement of the belts relative to the substrate to be coated (col 5 lines 3-30). A clearance large enough for the parts to pass through the plates is presumed. The lower belt is shown as longer than the upper belt in the figure. The flux (resin) is taught as liquid between the heated rollers (col 5 lines 20-24 and col 6 lines 29-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a pair of plates (54) for adjustable, controlled application of pressure between the parts (nuts) and belt (Wallace, figure 1 and col 3 lines 26-33) in a simple and cost-effective manner (Wallace, col 1 lines 25-30). Although the complete belt is not shown, a longer lower belt is presumed based on the larger roller (14) shown in figure 1.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sprengling (USPN 4496415) in view of Wallace (USPN 4279943).

Sprengling teaches a flux (resin) coating apparatus comprising a pair of rotating rollers (22,23) to be rotated in opposite directions while in contact forming an inlet section for storing flux between the rollers (figure and col 4 lines 48-61), a pair of endless coating belts (25) and a pair of presser plates (28, 29) which are vertically moveable for precise placement of the belts relative to the substrate to be coated (col 5 lines 3-30). The flux (resin) is taught as liquid between the heated rollers (col 5 lines 20-24 and col 6 lines 29-42). However, there is no disclosure of a belt made of an elastic material.

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Wallace teaches a flux (resin) coating apparatus comprising a pair of endless coating belts (lower 12 , upper 60) formed of an elastic material (rubber). A tapered pressure plate (54) is also employed (col 3 lines 26-33).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ belts made of an elastic material to prevent damage to the prepreg substrate while providing good coating adherence (Sprengling, col 2 lines 5-10).

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rodgers (USPN 5372493) in view of Wallace (USPN 4279943).

Rodgers teaches a flux (resin) coating apparatus comprising a pair of endless coating belts (2,4). The lower belt is longer than the upper belt (figure 2, col 3 lines 22-28 and col 6 lines 57-68) and a pair of presser plates (12,18) which press the belts (col 3 lines 29-45). The plates are vertically adjustable to provide the necessary clearance and are shown as tapered in figures 1-2 (col 4 lines 38-50). However, there is no disclosure of a belt made of an elastic material.

Wallace teaches a flux (resin) coating apparatus comprising a pair of endless coating belts (lower 12 , upper 60) formed of an elastic material (rubber). A tapered pressure plate (54) is also employed (col 3 lines 26-33).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ belts made of an elastic material as an obvious variation of the fabric belt (Rodgers, col 3 lines 22-28). By using a compliant belt material, the same

apparatus may be used to process workpieces of various sizes and shapes (Rodgers, col 2 lines 8-28).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fujiyoshi (JPN 3-275272), Fujiyoshi (JPN 4-351267), Velie et al. (WO 95/08403), Ishikawa et al. (USPN 4911351), Kawano et al. (USPN 6325276 B1), Fujiyoshi (USPN 4781320), Kuono et al. (USPN 6199750 B1), Warne (USPN 3958531), Kunz (USPN 3912573) and Bogdany (USPN 5114773).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne R. Edmondson whose telephone number is 703-306-5699. The examiner can normally be reached on M-F from 7-4, with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 703-308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

LRE
January 16, 2002



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